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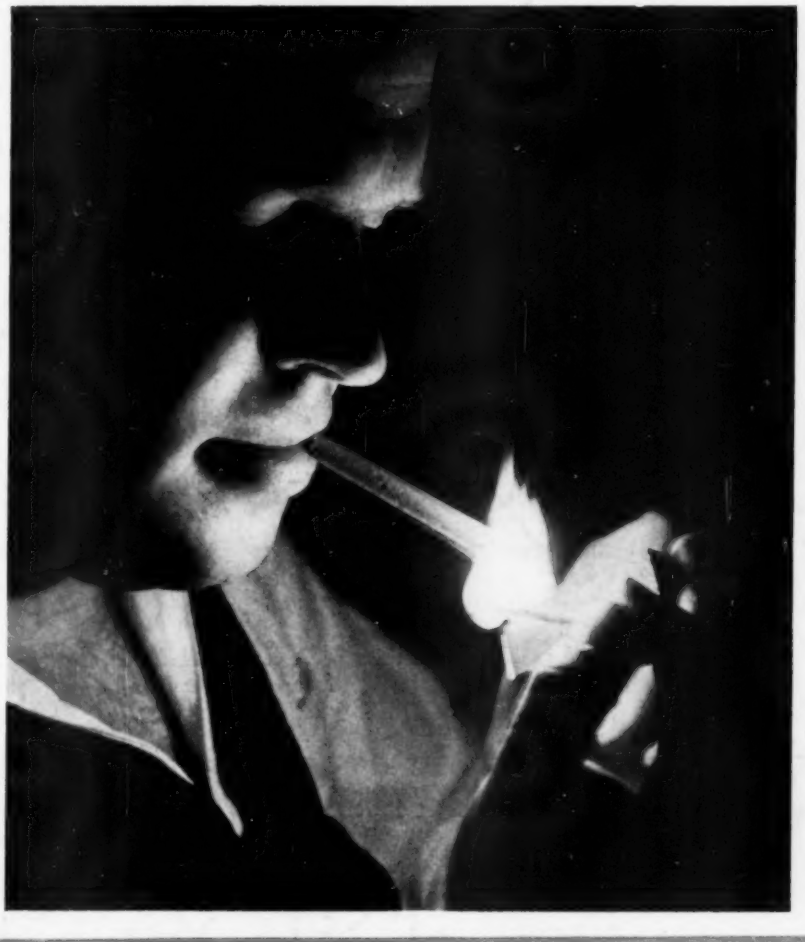
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



June 6, 1942

Can Be Seen 12 Miles

See Page 358

A SCIENCE SERVICE PUBLICATION

Do You Know?

Man is the only really *meat-eating* primate.

The *eel's* abundant scales are buried in the skin.

Rubies are next to diamonds in hardness among minerals.

In China the *turtle* was honored as a symbol of righteousness.

In ancient Peru, *silver* and *gold* were used to make garden spades.

There are at least 10,000,000,000 nerve cells in the *brain* of a normal human being.

Combs have been made of gold, silver, jade, ivory, tortoiseshell, copper, celluloid and even iron.

Ninety per cent of the *dyes* we used before the last war were imported; today America makes 95% of its own dyes.

Pressed wood hardboards are replacing aluminum and non-ferrous alloys in the manufacture of fan blades, gears, grilles, and motor housings.

Your *electric clock* keeps time because it is synchronized with power-station generators whose current alternates exactly 120 times every second.

The famous *wild ponies* of Sable Island, off the Nova Scotia Coast, are to be brought to the mainland to help take the place of vanishing autos.

Iodine is from the Greek word for violet.

The *grizzly bear* is the most ferocious animal in North America.

Blood plasma can be preserved by addition of 0.2% solution of one of the sulfa drugs.

All records for *milk* production in this country were broken last year, with a total flow of 117,000,000,000 pounds.

Although studied for centuries, *migration* of birds is still not understood.

Alfalfa roots may extend down in the earth for more than 30 feet.

Every dollar spent for the war effort requires 2¾ kilowatt-hours of *electric power.*

A carburetor for a jeep could be made from the *zinc* in a 3½-pound toy locomotive.

Question Box

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Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

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GENERAL SCIENCE

Colleges Train 172,000 Youths; Ready By Beginning of 1943

Speed-Up Courses and Change to Three-Term System Hurries Graduation and Avoids Seasonal Peak

BY JANUARY, 1943, a new force of 172,000 young men and women will be ready to tackle the technical problems of war for Government and war industries. Already they are streaming from colleges, universities and technical schools as a result of speed-ups in educational programs.

This is revealed by a count just completed of the college students being trained for 103 war-vital occupations as picked by the National Roster of Scientific and Specialized Personnel. The survey was conducted by the American Council of Education at the special request of the National Resources Planning Board.

A majority of the 812 institutions surveyed are already teaching a capacity load of students in the fields where manpower shortages are developing, Dr. C. S. Marsh, vice-president, indicated in his report of the survey. Courses are being compacted, vacations shortened and the three-term college year is being substituted for the time-honored semester ystem.

Graduation comes at least a month earlier than it used to in the majority of the institutions studied. One technological school is delivering to industry twice its usual number of trained youth, and is doing it in 16 months less time.

Seasonal peaks are also being ironed out of the college-trained manpower supply by changes in teaching policy and speed-ups of courses. Although June is still the favorite month for cap-and-gown processions and the awarding of degrees, there is now a steadier flow throughout the whole year. This is the tempo at which 1942's graduates will become available for war employment.

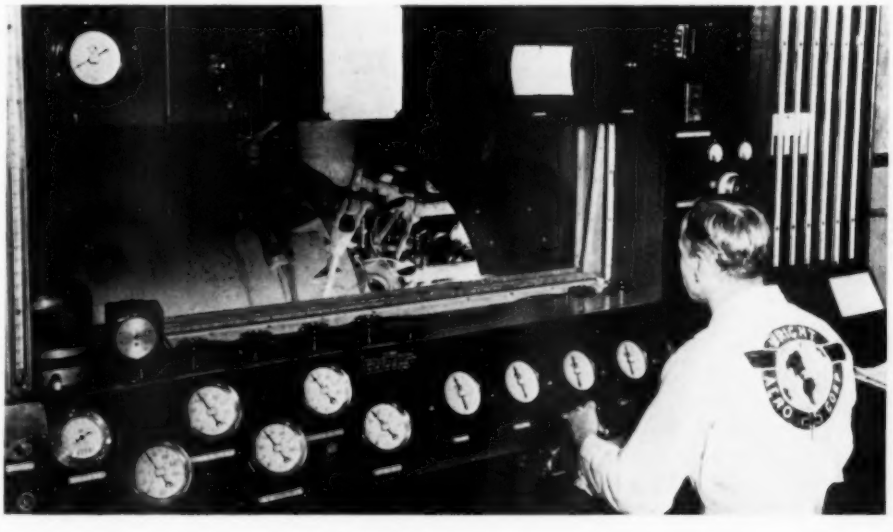
Already graduated in February or March, 12,000; in April or May, 43,000; June or July 74,000; August or September 13,000; December or January, 1943, 29,000.

Special courses have been organized by colleges to aid in the war program. Many have night classes in the ESMDT (Engineering, Science, and Management Defense Training) courses administered by the U. S. Office of Education. Others have turned over dormitories and classrooms for use of Army and Navy fliers. Laboratories have been turned over to the Government for military research and faculty members have been loaned.

Special courses bearing on war problems, such as camouflage, explosives, tactics, map-making, radio communication, cryptography, and military law have been organized.

The colleges and universities are facing a manpower problem of their own, meantime. Skilled scientists are being taken from teaching jobs to do military research. Enrollments of students are dropping off, too, but this does not balance the loss of faculty members. The professors most needed in war research are those teaching in the physical sciences. Their loss is not balanced by the drop in numbers of music students. Student enrollments have decreased most sharply in the liberal arts courses, teacher training and law schools.

Science News Letter, June 6, 1942



POSTGRADUATE

This engineer is one of 600, graduated two months ahead of schedule in the American college speed-up-for-war program, who have entered a post-graduate training course in the Curtiss-Wright plants. In the photograph, an airplane engine is being tested.

MEDICINE

Simple Treatment Works For Foot Wound from Nail

FOR getting men back on the job safely and quickly after foot wounds caused by stepping on nails, simple treatment is best, in the opinion of Dr. Fred H. Bowen, Lieutenant (j.g.) in the U. S. Naval Reserve.

Such treatment cured 661 nail puncture wounds of the foot in construction workers at the U. S. Naval Air Station, Jacksonville, Fla., with an average disability of 0.6 days, he reports to the *Journal of the American Medical Association.* (May 30)

Preliminary soaking of the foot in hot water for 15 to 30 minutes is an important part of the treatment. Dr. Bowen explains that this dilates the small blood vessels and brings into the wound an exudation of lymph, "the best germicidal agent in the body." The rest of the treatment consists, essentially, of painting an area around the wound with tincture of mercresin, picking or swabbing out the dirt that can be seen when the edges of the wound are held apart, and bandaging with a dry dressing.

Tetanus antitoxin is given and if the nail that caused the injury is larger than a 10 penny, the patient is given crutches and told not to work for at

least one or two days. Otherwise he returns to work at once.

The probing, injection of an antiseptic solution and draining usually done in treating such wounds is, in Dr. Bowen's opinion, harmful. He described experiments showing that in the probing tissues uninjured by the nail are injured and opened to infection.

Science News Letter, June 6, 1942

PHYSICS

Three Rocket Weapons in Use By Both Germans and Russians

Rocket Projectiles Are In Use Against Airplanes, Tanks and, Upside Down, Against Armored Ships

ROCKET WEAPONS, reported in use by both Russians and Germans, are of at least three different sorts, the Harvard War Institute for newspapermen, meeting under the Nieman Foundation, was told by Prof. George B. Kistiakowsky, ordnance expert on the Harvard University faculty.

One of the weapons employing the rocket principle is a rocket-projectile fired from airplanes against other airplanes or ground targets. Since it can be discharged without recoil, a much heavier missile can be used than is possible with the very light cannon that are the largest type of ordnance now mounted on aircraft.

A second weapon is a multiple rocket projector said to be used by the Russians against German tank attacks. It can fire 20 or 30 shells at once, like an enormous shotgun discharge. Tanks find this extremely difficult to dodge.

Finally there is an "upside-down" rocket used by German planes in bombardments of the fortress of Malta, and against armored ships. This adds the force of the rocket-stream push to the attraction due to gravity, and obtains better penetration of the bomb against protected positions.

The high cost of modern war was rapidly reviewed by Prof. Kistiakowsky in the course of his unofficial backgrounding of ordnance information.

Despite the fact that the price of TNT declined from $1.50 a pound in 1918 to 15 cents a pound just before the outbreak of the present war, military costs in general have gone up terrifically, due to the great increase in numbers of weapons needed, their rapid wearing out under present-day battle conditions, and their great complexity.

One half million dollar bomber is good for just about 20 operational flights if it is not destroyed in action. Adding this rapid depreciation to the maintenance costs of airfield and other necessary servicing, the cost per flight for each bomber is about $50,000, according to Prof. Kistiakowsky's estimates. And it costs all this to deliver only about $600 worth of TNT.

It seems difficult to increase the efficiency of high explosives much beyond that reached by TNT. The "ideal" explosive (not yet produced) would according to chemical calculations develop at most about twice the smashing power of TNT. So we have to go in for enormous quantities. Allied explosives requirements in the first world war were about 250,000 tons a year. Now they are about four times that much.

Science News Letter, June 6, 1942

AGRICULTURE

Hybrid Alfalfa Is Good For Livestock and Soil

HYBRID alfalfa, produced by U. S. Department of Agriculture plant breeders in the same manner as the now famous and all but universally planted hybrid corn, promises great things both for feeding livestock and for rebuilding soil fertility and preventing erosion. Adaptation to regional climatic and local soil conditions, together with the stronger growth resulting from hybrid vigor, is expected to result in higher yields of hay and silage per acre, hence more meat and milk.

As yet, Department of Agriculture scientists emphasize, hybrid alfalfa seed is not ready for the market. The method is still on a limited experimental basis only—comparable to the point reached by hybrid corn about 20 years ago, when Vice President Wallace, then still a Midwestern farm editor, was just gaining the attention of corn breeders for his unorthodox but productive methods. It is believed here, however, that the stage is about set for large-scale production and commercial distribution of hybrid alfalfa seed.

As in the production of hybrid corn, the new alfalfa comes from four carefully selected grandparent lines. Each has some quality or combination of qualities desired in the ultimate descendant —winter hardiness, drought resistance, high productivity, etc. The grandparent lines are paired and crossed, and selections from their offspring are crossed again, producing second generation hybrids combining all the desired qualities.

One considerable advantage in hybridizing alfalfa results from the fact that this plant is a perennial, and hence capable of propagation by cuttings, like rosebushes or grapevines. Once the desirable traits are fixed in the ancestral lines, these can be kept going indefinitely by vegetative reproduction, whereas the parental lines in corn, an annual plant, can be perpetuated only by constant inbreeding. It is expected that when hybrid alfalfa production gets on a permanent basis there will be "foundation plots" of carefully selected ancestor plants which will serve as constant reservoirs of desirable crop characters.

Another crop type on which farm plant breeders are hard at work is fall-sown grain much "grassier" than the winter wheats, oats and ryes now cultivated. The tendency has been constantly to cut down the amount of straw in winter grains and to concentrate on the seed. However, in Texas and other mild-climate grain-growing areas winter grains have proved valuable as winter pastures, and have often paid a profit to the farmer even when early-starting rust and other diseases have spoiled the grain crops themselves. Hence the search for new types of winter grains that will yield more as pastures, even at the possible expense of slightly smaller yields at the thresher.

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● RADIO

Saturday, June 13, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Stephen Duggan, director, Institute of International Education, will discuss the work of the Emergency Committee in Aid of Displaced Foreign Scholars, of which he is chairman.

Tuesday, June 9, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.

PHYSICS

"X-Ray Microscope" Invented By Nobelist W. L. Bragg

Instrument Now Being Perfected May Be Useful Aid In Crystal Analysis, Of Importance in War Research

AN "X-RAY microscope" invented by Prof. W. L. Bragg of Cambridge University's Cavendish Laboratory, is the newest instrument for peering into the innermost structure of matter. By its means can be seen the actual arrangement of the atoms in one layer of the crystal.

The instrument is not yet fully perfected and at present applies to only one special case. But Prof. Bragg hopes to extend its applications and believes that it will then be a useful aid in crystal analysis.

The X-ray analysis of crystal structure, which won the Nobel prize for Prof. Bragg and his father, the late Sir William Bragg, is of immense importance in all branches of both war-time and peace-time industrial research. On the crystalline structure depends the strength of steel girders, the toughness of armor plate, the hardness of tool steel, the properties of aluminum alloys, the lubricating qualities of paraffins and of graphite, the stretching of rubber, the covering power of pigments, in fact, nearly every aspect of the behavior of a solid substance.

But X-rays passing through a crystal do not directly reveal its structure. They produce a "diffraction pattern" of complicated design from which the positions and spacings of the atoms must be calculated. This gives the arrangement in a particular plane. To get the true arrangement in space, several such patterns must be photographed by passing the rays through the crystal in different directions. A three-dimensional model can then be made. This is a long and laborious process.

Instead of making a drawing showing the arrangement in a particular plane, Prof. Bragg's apparatus forms an optical image of it which can be viewed through an ordinary optical microscope. (The name "X-Ray Microscope" applies to the whole apparatus.)

He drills a number of small holes through a brass plate. The sizes and arrangement of these holes are determined by the diffraction pattern. The plate is placed in the path of a beam of ordinary parallel monochromatic light. This light in passing through the small holes produces a diffraction pattern of its own which, however, on account of the carefully calculated sizes and spacings, is a replica of the arrangement of the atoms in the crystal, each spot representing an atom. The image is focussed and viewed through the microscope.

Thus, X-rays passing through a crystal are diffracted by the structures they encounter, but produce a pattern bearing no resemblance to this structure. By rediffracting this pattern backwards, so to speak, with ordinary light, Prof. Bragg obtains a visible image of the atomic arrangement that produced it.

To get a good image, the holes in the plate must be accurately dimensioned and spaced to better than half a wavelength of the light used. On account of the difficulty of this, Prof. Bragg has lately devised an improved method. An enlarged drawing is made in which the holes are represented by solid black circles. This is then photographed and reduced to the proper size, the black circles being in effect converted to transparent holes. The use of this in place of the brass plate gave much better definition.

The new method was reported to the British science journal, *Nature*, with photographs made with the "X-ray microscope," and drawings of the same crystal structure calculated from X-ray diffraction patterns, showing close correspondence between the two.

Science News Letter, June 6, 1942

MEDICINE

Beef Blood May Save Lives Of Wounded Fighting Men

BEEF blood from the nation's slaughter houses, now thrown away at the rate of millions of gallons yearly, may be used in future to save the lives of wounded soldiers and sailors, Dr. A. Newton Richards, chairman of the Committee on Scientific Research of the Office of Scientific Research and Development, said on a Science Service radio talk over the Columbia Broadcasting System.

Scientists at Harvard University, he said, are working intensively in the effort to prepare beef albumen in such a form as to be harmless when injected into man. Albumen fights shock because of its ability to hold the fluid in which it is dissolved within the blood vessels. In shock, the blood vessels lose their capacity to keep blood and other fluid inside their walls.

Albumen from human blood has already been used effectively in fighting shock in civilian hospitals. A supply was taken to Pearl Harbor and used with dramatic results in the treatment of seven patients, two of whom were regarded as hopeless because of shock caused by extensive burns.

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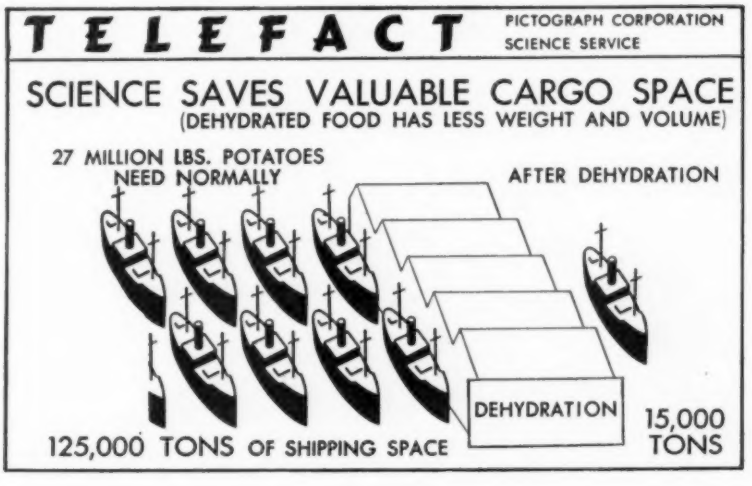

PSYCHOLOGY

How To See at Night

Our Second Kind of Eyes for Night Vision Enable Us To See Our Way in Blackouts and Against Enemy

By MARJORIE VAN DE WATER

See Front Cover

AMERICANS are developing a new sight skill—the ability to see the enemy in the dark of night and keep from stubbing toes during blackouts.

We city dwellers who spend all our waking hours in bright illumination may not realize that seeing in night's blackness is very different from seeing by daylight's brilliance.

You have two kinds of sight. One you use in the day and in the artificial sunshine of brightly lighted homes or offices and the white-ways of city streets. The other, only infrequently called to duty, you must use in a dark woods at night, or on the unlighted ocean. Then you must, like the proverbial cat or owl, see in the dark. Only under a full moon, or light of equal brightness, do you ever use both your day and night vision at the same time.

Physiologists know that these two kinds of vision are actually due to two very different kinds of seeing organs in your eyes. In the center of the retina, which is at the back of your eye, are the cone cells. They do your seeing for you in the daylight. Around the edge of the retina are cells of a different shape and different function. These are called rod cells. They see at night. Between these there is an area where both cone and rod cells are located.

Thousands of Times as Sensitive

Night eyes have severe limitations, but also wonderful possibilities if they are properly trained. They are thousands of times more sensitive than are your daylight eyes.

So important is night vision for airplane spotters, pilots, sentries, and lookouts, as well as for all those who must find their way around in military or civilian blackouts, that the U. S. Navy has appointed a Night Vision Board to teach naval officers how the eyes should be used at night.

The center of your eye is blind at night.

First and perhaps hardest, lesson you must learn about use of your night eyes is, therefore, to avoid looking straight at what you want to see. What astronomers learned years ago must now be mastered by airplane spotters. Look a little to the right or to the left of what you are trying to observe. Or look a little above or below. If it is faint and you look directly at it, it will disappear like Houdini.

You can even use this as a test to see whether you have been in the dark long enough for your night eyes to be working. Look at a group of stars such as the Pleiades which contains a number of faint stars. First look right at it and count all the stars you can see. Then look a little away and count all you see with the tail of your eyes. If your night eyes are working, you will count more. Look straight at them again and they are gone!

Night Eyes Are Color Blind

Night eyes are color blind. That is why "all cats look gray at night." If you see a colored light shining at night, and it looks red or green or blue, it is only because it is bright enough so that you can see it with your daylight eyes. But your night vision is much more sensitive to light of some colors than to others. Red is seen equally well by night and day vision. Blue light, however, affects your night eyes 1,000 times as much as it does your day eyes.

Night eyes lack the sharp vision for detail that your day eyes have. If you want to see to read, if you want to watch the dial of an instrument, if you must look at a map, a road sign, or your watch, you must use your day vision. For this you must have good light—the more the better. Especially if the print or other forms that you must see are small, the light must be bright.

Signs or arrows pointing to shelters, intended to be seen in a blackout, should be huge as compared with those intended for daylight eyes to see.

But night eyes are thousands of times as sensitive as your day eyes are.

The night pilot who has been flying in the dark for an hour or more can see the light of a candle or the flare of a match twelve miles away, it has been estimated, even if it were exposed for only a thousandth of a second.

If it burned continuously, he could see it over 200 miles away, were it not for interference of fog and haze or smoke and the curvature of the earth.

It is very important not to light a cigaret or expose a flashlight during a blackout. Even an instant's flash of light can betray your presence to an enemy miles away in the sky.

Your night eyes can see a light which is only one millionth as bright as the faintest light seen in sunshine.

Time Needed for Seeing

Night vision is not in use as soon as you step into the dark. It takes time—a half hour or more—before your eyes are dark adapted. When you leave a sunny street to go into a darkened theater, or you step from a brightly lighted room into the dark outdoors, you are completely blind at first.

Then several things happen. The pupil of your eye dilates, letting more light into your eyes. This is a mechanical action like opening your camera diaphragm to take a picture in poor illumination.

Next the cones of your day vision adapt to the darkness. This takes about five minutes and after that you feel more comfortable about moving around in the pitch dark.

PROTECTION

Goggled so that his eyes get accustomed to the dark even though he must be in the light, this Navy aviator, protected by red lenses, can still see enough to get around.

NIGHT EYES

The pupils of the eyes expand (top) to let in more light in darkness, but are normally smaller in daylight.

After a much longer time, your rod vision adapts to the darkness and you can begin to see shapes and outlines in the night that were not even vague bulking shadows when you first came out.

The air raid warden, the soldier, or the pilot who at the sound of an alert leaves a lighted room to run on duty, is completely at the mercy of his enemy so far as his vision is concerned. By the time he gains the use of his night eyes, the emergency might be all over.

And even when your eyes are dark adapted, flashing on a light, even for a very short time, may ruin your night vision for another half hour.

But there are ways to fool your eyes and have them ready for night duty when the call comes.

If you must read, you can do so with one eye. The eyes can be dark adapted separately. Put a heavy patch over one eye and you can keep it dark adapted while you use the other for reading in the light.

Much better are the red goggles used by the Navy for men on night duty. They wear these when they go into a lighted room, and protect their night eyes from the glare.

Best protection for night vision is darkness. Avoid the use of flashlights or illuminated dials. Turn out the light at least a half hour before you must go on duty in the dark and then protect your eyes from any glare as you value your life.

Science News Letter, June 6, 1942

PSYCHOLOGY

Red Light Best in Blackout Blue Easily Seen From Air

BLUE LIGHTS for blackouts are out so far as the U. S. Navy is concerned.

"Blue light is the worst possible for this purpose," reports the Navy's new Night Vision Board.

Lights for use during blackouts must serve a double purpose. They must give enough illumination so that instruments, charts, or dangerous obstacles can be seen. They must give a minimum of aid to the enemy.

In addition, the lights used during blackouts should, if possible, be so selected that they will not spoil the dark adaptation of the eyes that must penetrate the night's blackness in search of the enemy.

Red is generally best for all blackout purposes, the Night Vision Board finds. With red light, adapted eyes haven't the advantage over daylight vision that they have under other colors. For this reason, the red light you read your watch by is seen no more clearly by the enemy pilot in the sky than it is by you, even though you must use light-adapted vision for this purpose. If you had a blue light bright enough for this purpose, it would appear a thousand times brighter than the red light to dark adapted eyes. It could be seen ten times as far away.

Here are some other advantages of red light for the illumination of instruments and for all purposes where some light is essential:

1. The dark adaptation of the observer is disturbed less by red light than by light of any other color.

2. The after image which results from looking at instruments or other surfaces illuminated with red light is much less intense and of shorter duration than when blue, green, or white light is used. If you have been in the dark for a long time and suddenly turn an ordinary flashlight on your watch dial, you may "see" the watch face for some time afterwards and this will interfere with your ability to see the dark form of a plane or a ship.

3. Use of red light for the illumination of instruments causes less glare than when other colors are used.

4. The reflections which are caused by instrument lighting, as for instance on windshields or plateglass, may be strikingly reduced or suppressed completely by the use of red light.

Science News Letter, June 6, 1942

Books

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FORESTRY

Pine Seedlings Won't Grow Unless Roots Have Fungi

PINE, spruce and other conifer seedlings frequently fail to grow when transplanted into prairie soil. Cause for these losses has been traced to lack of a certain type of fungous growth on their roots, by A. L. McComb and J. E. Sass of Iowa State College.

Seedling loss was particularly troublesome on new nursery sites where seedlings of jack pine, Norway spruce and other conifer species produced weak, straggly growth, or died when only a few inches high. Roots of these seedlings were found to be uninfected with the fungal threads known as mycorrhiza, which are found in the root tissues of healthy trees. Botanists believe that these fungi aid the trees in absorbing food materials from the soil.

The situation was remedied by inoculating the soil with surface litter from an older coniferous plantation, which contained the necessary fungi. Phosphorus seems to be the chief plant food material which the fungi enable the trees to absorb. Application of phosphate fertilizer without soil inoculation resulted in satisfactory growth, and the fungi appeared on fertilized seedlings.

Science News Letter, June 6, 1942

PHYSIOLOGY

Hormone Test May Answer Boy or Girl Question

THE QUESTION, Will it be a boy or a girl? asked by almost all expectant parents, might be answered by a test of the amount of male sex hormone excreted by the expectant mother months before the baby's birth, three British scientists suggest in a note to the editor of *Nature* (March 14).

Tests on 20 expectant mothers were made by Dr. Harold Burrows, Dr. Douglas H. McCleod, and Dr. F. Ll. Warren, of the Chester Beatty Research Institute at the Royal Cancer Hospital (Free) in London. Their idea is that if the unborn baby is going to be a boy, its sex glands may be producing enough male hormone to cause a recognizable increase of male hormone in the expectant mother's kidney excretions. The most likely time for a positive result in such a test, they state, would be early in pregnancy.

The average excretion of male sex hormone from 14 women who later gave birth to boy babies was 26.2 milligrams per liter. The average amount excreted during the same stage of pregnancy by the six women who had girl babies was 14.6 milligrams per liter. The small number of expectant mothers tested, however and the fact that in individual cases there was no significant difference between the amounts of male hormone excreted by a woman who had a boy and one who had a girl, makes the test unreliable for immediate practical use. The scientists are unable to continue the research and report the work thus far with the hope that others may continue it and determine the possibilities of the test becoming practical.

The fact that the unborn baby's adrenal glands as well as the sex glands may be involved in the sex hormone excretion must also be considered.

Science News Letter, June 6, 1942

CHEMISTRY

No Rubber From Miracle, Leading Chemist Warns

NO CHEMICAL miracle will give the American public the rubber that it wants to shoe its tires, Dr. Thomas Midgley, Jr., inventor of the tetraethyl anti-knock material for gasoline, warned in receiving the Willard Gibbs medal, high chemical honor.

Fundamentally, America's acute shortage of rubber is due to the "mental slothfulness" of rubber experts who failed to separate rubber from plants growing in our own country and who do not yet know the fundamentals of rubber even though they have been studying this material for a century, Dr. Midgley said.

"Do not give credence to fanciful rumors that some mysterious inventor, like the White Knight in Alice in Wonderland, can suddenly supply huge amounts of rubber or a satisfactory substitute from nowhere," Dr. Midgley said.

He blamed the confusion that has existed among rubber chemists to a lack of appreciation that natural rubber contains two kinds of rubber, a sol rubber and a gel rubber that seem to be chemically the same but physically are different. Sol rubber vulcanizes to a useful product, while gel rubber does not unless it is mixed in the air to give a material quite similar to sol rubber.

Extension of rubber chemical theory might well lead, Dr. Midgley said, to better and less expensive synthetic rubbers than we now have.

Science News Letter, June 6, 1942

IN SCIENCE

PHYSICS

Babylonian Influence Seen In Thermometer Markings

VESTIGES of ancient Babylonian influence can be found in the scale of our ordinary Fahrenheit thermometer, according to a communication of Carl B. Boyer of Brooklyn College, to *Science*. The Babylonians counted by sixes and sixties, the sexagesimal system, instead of by tens and hundreds as we now do in the decimal system. They divided the circle into 360 equal parts, and we still measure our angles by these "degrees."

Early in the eighteenth century, Roemer, under Babylonian influence, made thermometers the scale of which was 60 degrees from the zero to the boiling temperature of water. Fahrenheit, who continued his work, found these degrees too large for practical purposes and subdivided them into four equal parts, giving 240 degrees for the same range. In later modifications, the degrees were slightly changed again, bringing the boiling point down to 212 degrees where it now stands.

Science News Letter, June 6, 1942

ENGINEERING

Foods Self-Refrigerating On Voyage to England

PERISHABLE foods are now being made to refrigerate themselves on American cargo ships, using an ingenious plan made public by the United States Department of Agriculture. Lard, chilled to a zero temperature or lower, is the refrigerating agent. By lining the holds of ocean-going ships with insulating material, packing large containers of the refrigerated lard to form a floor and walls around perishable foodstuffs, placing more lard over the top, and adding a final cover of insulation, the shipment is kept safely cold.

The system has been adopted to keep Axis submarines from stopping shipment of perishables to United Nations ports by systematically sinking refrigerator ships. It has the added advantage of saving space.

Science News Letter, June 6, 1942

NCE FIELDS

PHYSIOLOGY

Don't Stuff on Carrots For Good Night Vision

GOOD NEWS for the aviators who don't like carrots and spinach! Stuffing with these vitamin-rich vegetables won't make you see any better at night unless you are vitamin starved to begin with. U. S. Navy's new Night Vision Board says the use of large extra doses of vitamins, more than one would get in a liberal well-balanced diet, will not improve night vision above normal.

Vitamin shortages do result in impaired night vision, the Board says, and on submarines, small ships or long cruises where adequate supplies of fresh foods cannot be carried, vitamin capsules or pills can be prescribed by medical officers to make up for diet deficiencies and keep the men's night vision always up to peak fitness.

The best diet in the world set out daily on your table won't keep your eyes fit for night duty, however, if you always push aside the fresh vegetables, green salads, fruit and milk and eat only meat, potatoes, bread, pie, sweets and coffee, the Navy physicians warn.

Science News Letter, June 6, 1942

MEDICINE

Gum Trouble Traced to Modern Sleeping Medicines

PHENOBARBITAL and related sedative drugs may cause a kind of gum trouble that can be mistaken for trench mouth, Dr. John C. Gable, of Woodward, Iowa, reports (*Journal, American Dental Association,* June 1).

He discovered this when he became a member of the dental staff of the Iowa Hospital for Epileptics and School for Feebleminded, where he found "hundreds of patients were being treated for so-called trench mouth."

The usual treatment for trench mouth failed to clear up the condition and it was decided that the trench mouth spirochete was not the sole cause.

"The condition was confined to patients who were being given either phenobarbital or dilantin (a new epilepsy remedy) or both," Dr. Gable observed.

From a dentist at another state institution, pharmacists and veterinarians, Dr. Gable subsequently learned that these scientists also had found that phenobarbital and dilantin, when given over long periods, caused gum inflammation, sometimes with a bluish discoloration.

Thorough brushing twice daily, cutting away diseased parts of the gum when necessary, painting with a saturated solution of tannic acid in glycerine and application immediately after of a 5% solution of chromic acid are the chief features of the treatment Dr. Gable uses for the condition. He concludes, however, that "nothing has been brought out as yet that will counteract the effects of the drug. Local treatment is only palliative."

Science News Letter, June 6, 1942

INVENTION

New Sight For Rear Gunner Permits Streamlining

A NEW telescopic sight for the use of rear gunners on bombing planes, just patented by Wolfgang B. Klemperer of Los Angeles, makes better streamlining of the fuselage possible and at the same time gives a wider arc of fire for the protection of what is now the most vulnerable of all points on a bomber—the rear.

At present, with his sights fixed rigidly on the gun, the gunner must move from side to side in order to fire in any direction other than dead astern. This necessitates making the tail gunner's position wide enough to let him slide back and forth, thereby producing a thick, lumpy tail instead of one tapered to a point as good aerodynamics requires.

In Mr. Klemperer's invention, a fairly wide-angled fixed telescope is provided with a movable sighting reticule, so connected with the gun that the sighting cross-lines are on the target when the gun is in proper firing position. The gunner can therefore sight accurately by moving only the gun, and without needing to shift his position or sway his shoulders and head. To give a wider angle of fire, segments of the pointed tail are hinged to open like the petals of a flower just before firing.

Rights in Mr. Klemperer's patent, no. 2,281,772, are assigned to the Douglas Aircraft Company.

Science News Letter, June 6, 1942

ASTRONOMY

New Planet May Be Added To Sun's Family of Nine

A NEW planet about the size of Pluto but a little less distant may be added to the sun's family, which already contains nine members.

No such tenth member has yet been found, but the attraction of such a body would account for the three days' delay in the return of Halley's comet in 1910, according to the calculations of Dr. R. S. Richardson of Mt. Wilson Observatory reported in the *Publications* of the Astronomical Society of the Pacific (February). And he has told astronomers just where to look for the new body. It should now be found, he says, at about right ascension 16 hours, declination minus 20 degrees. These figures enable astronomers to point their instruments directly at the suspected spot.

At first, Dr. Richardson thought Pluto might be the culprit that held back Halley's comet. But it turned out that Pluto was miles away at the time—in fact, more than three billion miles away. This was the very closest the planet ever got to the comet, and it happened in October, 1901. Also Pluto is so tiny, only about as big as the earth! Finally, Dr. Richardson's very careful calculations showed that if Pluto had any effect at all, it was in the wrong direction; it would have hastened rather than delayed the comet.

Pluto moves in an orbit at a mean distance of 3,700,000,000 miles from the sun, which is nearly 40 times the earth's distance, 93,000,000 miles. Pluto's nearly circular orbit is so large that the whole of the long and narrow orbit of Halley's comet falls well within it, with a margin of about a billion miles. The comet requires 77 years to traverse its orbit, while it takes Pluto 248 years.

What is needed to explain the comet's dilatory behavior, Dr. Richardson found, is a planet whose orbit just grazes the furthermost tip of Halley's orbit, grazes it by about 9,000,000 miles. The planet would be about the size of Pluto or the earth. A larger planet at a greater distance would also do the trick, but the planet must be small because otherwise it would have been discovered.

If this planet is found, it will be the third to have been predicted mathematically and afterwards discovered. The other two are Neptune, discovered in 1846 from the calculations of Leverrier and Adams, and Pluto, discovered in 1930 from the calculations of Lowell and Pickering.

Science News Letter, June 6, 1942

PSYCHOLOGY

U. S. Has Little To Fear From Influence of Propaganda

Small Size and Character of American Audience Considered Tribute to Domestic News Reporting Here

THE United States has little to fear from the influence of foreign short-wave propaganda broadcasts on listeners in this country, because of the very small size and the character of their audience.

This is called a tribute to the confidence of Americans in our domestic newspapers and radio stations, in a report of a study of foreign propaganda and American listeners at the Princeton Listening Center, just published in book form under the title "Propaganda by Short Wave," edited by Prof. Harwood L. Childs and John B. Whitton (*Reviewed, SNL, this issue*).

A large number of Americans have tuned in at least once to short-wave programs, it was found. But only an extremely small number listen frequently or regularly. There is only a slight tendency on the part of listeners to confine their attention to the programs of a single country.

One survey of a cross-section of the population cited by the authors indicated that 10.8% have listened to foreign broadcasts, but only 0.002% listen daily to German broadcasts. Only 0.006% listen as often as daily to programs from England.

"Although short-wave reception is reasonably good in most sections of the country, it cannot compare in quality to that for domestic broadcasts," said Prof. Childs. "Nor are the programs themselves superior to those of American stations. What American citizens see or hear in their newspapers, magazines, motion pictures, and domestic radio programs exerts a far greater influence on their opinions than anything which reaches them via short wave. The quality of domestic radio programs in the United States, especially news broadcasts, has been so far superior to anything foreign countries have offered by short wave, that there is little likelihood that any considerable number of people will prefer to listen to the latter instead of the former.

"The formal entrance of the United States into the war against Japan, Germany, and Italy does place the situation in a somewhat different light. The President of the United States has indicated that the freedom of public and private agencies to disseminate news and information will be limited to the extent of forbidding disclosures which may be of value to the enemy, and disclosures the validity of which has not been thoroughly authenticated.

"These censorial precautions, necessary as they are, will most certainly encourage foreign, enemy broadcasters to try to enlarge their American listening audience by purporting to supply the information withheld or delayed by our own government action.

"To preserve the prestige of our communication agencies and maintain public confidence in their adequacy as sources of information, it will be necessary for public officials in the United States to make absolutely certain that information withheld for military reasons is not, in fact, known to the enemy; and, in the second place, that there is never a delay in the publication of facts which listeners to short-wave broadcasts can get promptly.

"The best way to defeat the designs of the enemy in their attempts to build up a large American short-wave audience is to convince the American people that they can obtain from their own domestic stations, or in their own newspapers, as prompt and reliable news as they can possibly get by short wave. Words will not suffice. The American radio listener must learn from actual experience that news which he fails to obtain from domestic sources but finds elsewhere is likely to be unreliable, distorted, and in most cases false."

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ARCHAEOLOGY

Democratic Civil Service In China 2,000 Years Ago

A REAL democratic civil service was instituted in the Chinese government more than 2,000 years ago, according to archaeological findings reviewed today by Carl W. Bishop, Smithsonian Institution archaeologist.

Selection of the official hierarchy in China has been by competitive examination since the third century B.C. From the first, all but a very few were eligible to compete. China's feudal system had already collapsed at this early date and, largely under the influence of the Confucian philosophy, a democratic system of opportunity for vast numbers of the people became established.

The history of the Chinese people can be traced without a break from the year 841 B.C., Mr. Bishop said. The earliest known social order was a typical feudal society. The masses were illiterate and only the sons of nobles enjoyed formal schooling. Chariot driving, a subject widely taught in the ancient schools, was a distinguishing mark of noble blood and an exclusive privilege of the ruling class.

Most of the records surviving today speak only of the culture of this class in the ancient society, probably because literacy was confined to its members. But the apparently simple picture of ancient life which these records depict is deceptive, Mr. Bishop indicated. Actually, the origins of Chinese culture were extremely complex and were only beginning to be understood at the outbreak of the present war.

The breaking down of the ancient feudal society, which in China occurred more than 200 years B.C., has no counterpart in the history of Japan, Mr. Bishop pointed out. Thus a fundamental difference exists between the two Asiatic cultures: Japan remained a feudal society, with the old class system, until 1868 A.D., while China was enjoying 2,000 years of democracy.

Science News Letter, June 6, 1942

BOTANY

NATURE RAMBLINGS

by Frank Thone

Early Hay Fever

HAY FEVER originally got its name in England, because its severest outbreaks in that country came at the time of the hay harvest, and people got the idea that the hay was somehow responsible for their itchy noses and smarting, tearful eyes. In a way it was, but not exactly in the way people thought.

Hay is usually cut during or just after blossoming of the grass, because it is then at its highest point of development. It has reached its maximum growth, as well as its highest content of starches, sugars and proteins. Cut and cured at that stage it offers best nutrition for livestock.

However, by the same token, blossoming grass is of course shedding its pollen freely. All grasses are wind-pollinated, and wind-borne pollens of course are the great cause of hay fever. So because coincidence is misaken for cause, hay gets the blame for what pollen does.

However, in this country at least, even grass pollens are responsible for only a very small fraction of hay fever cases. The big tide of sneezes, as everyone knows, begins in high summer, when the ragweeds come into bloom. Nine-tenths or more of all hay fever cases in the United States are traceable to ragweed pollen.

But even the early hay fever incidence is due only in minor degree to grass pollens. A much more important early hay-fever weed is the narrow-leaved plantain. Ranking close to this common lawn pest are various wind-pollinated tree flowers (and most tree pollen is wind-borne), notably oak, walnut, hickory and ash. Pine and other conifers produce immense quantities of pollen, but it seems to trouble fewer noses than does the pollen of deciduous trees.

Early hay fever gives more trouble to allergists than late cases of the malady. If a patient comes in with typical symptoms during July or August, the odds are more than ten to one that ragweed pollen is to blame. But in May or June it may be any one of a score of plant species, so that the victim's arm has to be scored with many pollen-test scratches.

Ironically, people tend to blame bright flowers that they notice rather than the inconspicuous apetalous, usually green pollen-shedders that are really responsible. Just as goldenrod gets cursed for the crimes of the ragweeds, roses often "take the rap" for early hay fever, under the misnomer of "rose fever."

Science News Letter, June 6, 1942

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PUBLIC HEALTH

Death Stalks Pacific Coast Due to Red Microorganisms

"Red Tide" Is Due to Poisonous Algae Originating In Japan and Spreading All Along Our West Coast

NOT THE Japs this time, although the "red tide," so called from the rust-red color the surf bears when this poisonous alga spreads itself along for miles on the Pacific coast from California to Washington, originates off the coast of Japan.

Following deaths reported recently of several persons and many fowl and animals from eating infected mussels and clams which they had obtained from the rocks and sands in Oregon and Washington bordering the Pacific, authorities have forbidden the removal of any of these seafoods from the beaches of the two states until Nov. 1.

Positive proof that the shellfish are unfit to eat was given not only by the investigation in the laboratories of the Oregon State Board of Health but also by Dr. Herman Sommer of Hooper Institute at Seattle and Dr. Trevor Kincaid of the University of Washington. The poison consists of microscopic organisms known as Goniaulax by scientists, which is present in all shellfish to some degree. However, the usual small amount does not prove harmful, and may even be beneficial; but in certain heavy tides, mussels and clams take in an extraordinary amount of Goniaulax, which is the only poisonous microorganism known in sea-water. This may be overcome by proper cleaning of the shellfish, for the poison is predominantly in the liver and intestinal tract and only to a slight extent in the white meat. However, in the present instance, samples investigated from the catches that caused the death of several people at different times and places, convince the authorities that it is not best to leave this to chance and hence these sea-foods will be forbidden.

The virulent poison created by the unicellular organism *Goniaulax catenellia* is one of the strongest known. It belongs to the class of alkaloids, such as strychnine, and symptoms of poisoning in man or animal are entirely of nervous origin and may begin immediately after the meal. First signs of the poisoning are a prickly feeling in the lips, tongue and finger tips, followed by numbness. An ataxic gait and muscular incoördination and finally ascending paralysis mark the progress of the poisoning, with death from respiratory failure in from two to twelve hours after consumption of the toxic shellfish. Crabs and oysters do not feed on the "red tide" and hence are free from this menace to life.

Science News Letter, June 6, 1942

BIOPHYSICS

Protoplasm Rubber-Like But Does Own Stretching

PROTOPLASM, the material basis of life seems to have a rubber-like structure. However, unlike rubber, it does not have to wait for someone else to stretch it; protoplasm does its own stretching and contracting.

These are two of the points about the strange, viscid, ceaselessly pulsating and streaming stuff that is the "alive" part of all cells brought out in a new book, *The Structure of Protoplasm*, edited by Prof. William Seifriz of the University of Pennsylvania (*Reviewed, SNL, this issue*).

Ever since biologists first looked at protoplasm through good microscopes there has been much "learned argument, about it and about," and even yet the doctors disagree about its ultimate structure. Microscopic examination, even with the highest powers of the microscope, tells little. Protoplasmic structure has been likened to granules, globules, a network of bubbles, a "brush-heap" of

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fibers, says Prof. Seifriz. Likeliest structure, on the basis of evidence now in hand seems to be one of overlapping parallel submicroscopic fibers, with minute gaps between their ends. This resembles the theoretical structure of rubber.

The ceaseless, pulsating stretch-and-contract that we see at its highest development in the beating heart and the breathing-muscles runs throughout the whole living world, wherever protoplasm exists, Prof. Seifriz points out. In its most primitive embodiment it is found in the very lowly organisms known as slime-molds, which consist merely of naked masses of protoplasm. These creep and flow with a readily detectable pulsation, slow but rhythmic.

The book is a symposium, to which nine other specialists besides Prof. Seifriz have contributed chapters on various phases of the study of protoplasm.

Science News Letter, June 6, 1942

RESOURCES

This Hemisphere Searching For Cheap Labor for Mica

No Machine Exists Which Can Grade and Split the Delicate Mineral as Expertly as Hands in India

THREATENED by the jeopardy of India with loss of high-grade mica vital to high-compression airplane motors and scores of electrical appliances, this hemisphere is looking around its own back yard for opportunities to begin a substitute mica industry.

Not only did India produce 6,334 short tons of a total world production of 9,016 short tons, but her mica was expertly graded and split by family labor content with 9 to 12 cents per day.

Argentine, Brazil, Mexico, Canada and the United States all have rich mica deposits, now being surveyed for increased production—but there is little expert mica labor, and none willing to work for Indian wages. Neither has western man been smart enough to invent a machine which can grade and split the delicate mineral as expertly as the swift, brown hands of Indian families.

Consequently mica users in this hemisphere, used to the excellence of the Indian product, have scorned efforts by nearby producers in Brazil whose grading was careless.

Several plans are under study for introducing the mica-splitting industry into this hemisphere. Canada already produces a small quantity of splitting and could produce more if prices rose. Mexico and Puerto Rico have been suggested, the latter on account of its abundant supply of cheap labor. But even in Mexico and Puerto Rico labor demands far higher pay than the workers of India.

Mica is important to electrical appliances because it can be divided into thin, flexible, transparent films which are unaffected by fire, water, electricity, or acid, and whose volume remains constant in extreme heat and cold. These characteristics are found in no other substance, and no synthetic substitute having similar qualities has so far been discovered.

One of the most important uses of mica is in the insulation of airplane motor spark plugs, in which the mica forms a thin wrapping for the spindle, called "cigaret mica." All tubes in radio receiving sets require from two to four pieces of mica to hold the filaments upright and to keep the internal assembly rigidly in the center of the tube. In every tank, airplane, and ship, mica is essential to the condensers.

Fortunately, large supplies of mica are found in this hemisphere. The United States and Canada have for some years been sources. The crucial problem in production, should the hemisphere be separated from Indian sources, lies in the lack of trained, cheap labor to grade and split the material.

Science News Letter, June 6, 1942

MEDICINE

Compromise Treatment Suggested for Syphilis

A COMPROMISE between the radical "five-day" treatment for syphilis and the usual 18-month treatment is proposed by Dr. Harry Eagle and Dr. Ralph B. Hogan of the U. S. Public Health Service and the Johns Hopkins Medical School (*Science*, April 3).

From a study of 2,000 rabbits with syphilis, the two physicians noted that within broad limits the curative dose of Mapharsen under any one type of treatment did not vary with the length of time the treatment required. On the other hand, the margin of safety increased as the time-period over which the drug was given increased.

"In the absence of evidence to the contrary," they state, "we must assume that these same considerations apply in human beings."

They accordingly arranged three schedules of treatment for patients with early syphilis in twelve cooperating clinics. The schedules are: injections three times weekly for four weeks; injections three times weekly for six weeks; injections three times weekly for eight weeks. So far, they report, there have been encouragingly few bad effects from the drug.

Science News Letter, June 6, 1942

A *horse* needs two or three pounds of feed each day for every hundred pounds of body weight.

The true *sarong*—as distinguished from the Dorothy Lamour version—is worn by both men and women in the Malay Archipelago, Ceylon, and some parts of India; it is a long strip of cloth, sewed together at the ends and worn as a petticoat tucked around the waist.

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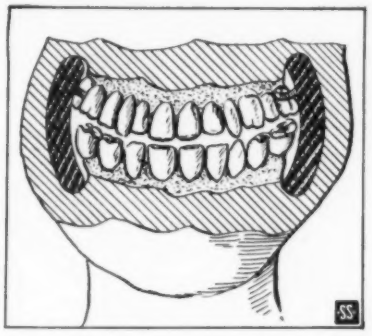
For discharging static electricity from an automotive vehicle, a small trailing metallic wheel has recently been patented. It is intended to replace the clanking chain so frequently carried by trucks. Doubtless it will be much more quiet, but neither more nor less effective in discharging electricity.

A hoe with a variety of interchangeable blades, making it almost a universal garden tool, has recently been patented. The blades may include a straight edge of the usual type, a rounded edge, a sawtooth edge, a single V point or a re-entrant V giving just two sharp points, etc. They are attached by a simple interlocking device requiring no screws or nuts. One advantage is that the blades can be removed for sharpening.

Non-fogging windows for gas masks, observation panels for aircraft, etc., are the subject of a recent invention on which four patents have been taken out. The windows are made of cellulose acetate plastic or similar material, one side of which has been made more capable of absorbing moisture than the other by saponifying it. Or the object is accomplished by cementing together two sheets of plastic, one of which is more absorbent than the other.

To change the expression of your face is the object of the device illustrated. Its Hungarian inventor, who has secured a patent in this country, thinks movie actors will prefer it to a mask. According to the shape, size and position of the side wings attached to the teeth, he



claims that an old face may be made young, a round face oval or square, the lips may be made thicker or thinner, and the chin may be altered.

Making pies with the help of air pressure and vacuum is the process used in a new automatic pie-making machine recently patented. To lift the upper pie crust from the table where it is formed, an inverted metal cup is lowered over it. A slight vacuum produced above the crust lifts it into this holder, which then transfers it to the pie. A slight air pressure above the crust then presses it firmly into place on top of the pie. All the operations are of course done automatically.

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 107.*

Science News Letter, June 6, 1942

An absolute maximum of joking, teasing and familiarity was encouraged among in-laws by the *Seminole* Indians of Oklahoma, according to Dr. Alexander Spoehr, of the Field Museum of Natural History, Chicago.

Nearly two tons of *nicotine* per year, extracted from many more tons of tobacco plants, are sold to the oil industry as an active ingredient in insect sprays.

MICROBIOLOGY

Malaria Germs, Preserved By Freezing, Survive

MALARIA GERMS, and probably the germs of other diseases as well, can be frozen at temperatures colder than 100 degrees below zero in the Fahrenheit scale and kept at that extremely frigid temperature for as long as seven weeks without damage, Dr. Reginald D. Manwell, of Syracuse University, announces.

His method, so far applied only to germs of bird malaria, consists of instantaneous freezing of the germs in a small amount of the birds' blood in a test tube by whirling the tube at high speed in a mixture of alcohol and dry ice. Thawing within a few seconds is required to avoid killing the germs when the scientist wants them alive.

Saving of urgently needed shipping space and reduction in expense will be one result of Dr. Manwell's achievement, since germs can now be shipped frozen in small containers from one laboratory to another, instead of in the bodies of guinea pigs, birds or other laboratory animals requiring bulky cages.

Science News Letter, June 6, 1942

Enjoy an education in the sciences

A comprehensive and liberal course in science is available to the reader of the six books which comprise the new series known as "The Sciences." Each book is in itself a complete essay affording a view of basic principles, concepts and methods of research in a particular field. Each has been written by a master of his own subject who has surveyed the field for presentation of what is most needed for broad understanding. Together the six volumes provide a well rounded, interesting study of the world we live in.

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•First Glances at New Books

PHYSICS

INTRODUCTION TO THE THEORY OF RELATIVITY — Peter Gabriel Bergmann — *Prentice-Hall,* 287 p., $4.50. Albert Einstein in a foreword states that this book satisfies a definite need for a textbook that requires only "a familiarity with calculus and some knowledge of differential equations, classical mechanics, and electrodynamics." The tensor calculus is developed in the book itself. More explanation than is usual in a mathematical treatise makes the mastery of the subject easier. Emphasis is laid on its empirical basis. Some defects of the general theory of relativity are discussed in the final section and possible directions of future research are pointed out.

Science News Letter, June 6, 1942

PROPAGANDA

PROPAGANDA BY SHORT WAVE — Harwood L. Childs and John B. Whitton, eds.—*Princeton Univ. Press,* 355 p., $3.75. See page 362.

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ETHNOLOGY

GUAM AND ITS PEOPLE, A Study of Culture Change and Colonial Education —Laura Thompson—*American Council, Institute of Pacific Relations,* 308 p., illus., $2.50. Giving a vivid and detailed picture of the island and its people, the Chamorro. This book should prove a valuable text when the task of reconstruction is undertaken after the expulsion of the present invaders.

Science News Letter, June 6, 1942

PSYCHOLOGY

THE PREDICTION OF PERSONAL ADJUSTMENT — Paul Horst and others — *Social Science Research Council,* 455 p., $2. A technical volume dealing with problems of predicting the future of individuals in jobs, the armed forces, war industry, school, marriage and even whether they will persist in a life of crime.

Science News Letter, June 6, 1942

PSYCHOLOGY—MEDICINE

PSYCHOSURGERY, Intelligence, Emotion and Social Behavior Following Prefrontal Lobotomy for Mental Disorders—Walter Freeman, James W. Watts and Thelma Hunt—*C. C. Thomas,* 337 p., illus., $6. A technical medical book describing a surgical operation used by the authors in chronic cases of mental illness, in which the frontal lobes are cut off from the rest of the brain. The authors themselves say that the relation of the frontal lobes to mental disease is purely speculative, that the operation is often fatal, or that if "successful" is apt to result in anti-social behavior.

Science News Letter, June 6, 1942

• Just Off the Press •

ANNUAL REVIEW OF PHYSIOLOGY, Vol. IV—James Murray Luck and Victor E. Hall, eds. —*Annual Reviews,* 709 p., $5.

A CAMERA REPORT ON EL CERRITO, A Typical Spanish-American Community in New Mexico —Irving Rusinow—*Govt. Print. Off.,* 136 p., illus., 45c.

THE COMING SHOWDOWN — Carl Dreher — *Little, Brown,* 419 p., $3.

ESSENTIALS OF ASTRONOMY — John Charles Duncan—*Harper,* 181 p., illus., $1.85.

THE FARM PRIMER, A Manual for the Beginner and Part-Time Farmer — Walter Magnes Teller—*McKay,* 266 p., $2.50.

FOUNDATIONS OF ASTRONOMY—W. M. Smart —*Longmans, Green,* 268 p., $4.20.

FROM COPERNICUS TO EINSTEIN—Hans Reichenbach; trans. by Ralph B. Winn—*Alliance Book Corp.,* 123 p., $2.

HANDBOOK OF SCIENTIFIC AND TECHNICAL SOCIETIES AND INSTITUTIONS OF THE UNITED STATES AND CANADA (4th ed.)—U. S. Section compiled by Callie Hull and Mildred Paddock; Canadian Section compiled by S. J. Cook and P. A. Howard—*National Research Council,* 389 p., $4.

INTRODUCTION TO SEMIMICRO QUALITATIVE CHEMICAL ANALYSIS—Louis J. Curtman—*Macmillan,* 377 p., $2.75.

LANDSCAPE, As Developed by the Processes of Normal Erosion—C. A. Cotton—*Cambridge (Macmillan),* 301 p., illus., $4.75.

METALLURGY — Carl G. Johnson — *American Technical Society,* 262 p., illus., $2.50.

NEW PRACTICAL CHEMISTRY AS APPLIED TO MODERN LIFE (rev. ed.)—Newton Henry Black and James Bryant Conant—*Macmillan,* 683 p., illus., $2.20.

PAIN—Thomas Lewis—*Macmillan,* 192 p., $3.

THE "PARTICLES" OF MODERN PHYSICS—J. D. Stranathan—*Blakiston,* 571 p., illus., $4.

PLANE TRIGONOMETRY MADE PLAIN, With Logarithmic and Trigonometric Tables—Albert B. Carson—*American Technical Society,* 389 p., $2.75.

PRICE CONTROL, The War Against Inflation—Erik T. H. Kjellstrom and others—*Rutgers Univ. Press,* 171 p., $2.50.

PROPAGANDA BY SHORT WAVE—Harwood L. Childs and John B. Whitton, eds.—*Princeton Univ. Press,* 355 p., $3.75.

REPORT OF THE COMMITTEE ON SEDIMENTATION, 1940-1941—*Division of Geology and Geography, National Research Council,* 110 p., mimeographed, $1.

A SHORTER COURSE IN ORGANIC CHEMISTRY (2d ed.)—J. C. Colbert—*Appleton-Century,* 355 p., $3.75.

SOLVING SCHOOL HEALTH PROBLEMS, The Astoria Demonstration Study—Dorothy B. Nyswander—*Commonwealth Fund,* 377 p., $2.

WHAT THE CITIZEN SHOULD KNOW ABOUT CIVILIAN DEFENSE—Walter D. Binger and Hilton H. Railey—*Norton,* 183 p., illus., $2.50.

Science News Letter, June 6, 1942

HORTICULTURE

HERBS, Their Culture and Uses—Rosetta E. Clarkson — *Macmillan,* 226 p., illus., $2.75. We are warned that the war is going to cause a shortage in some of our most-used spices and flavoring herbs, so that it behooves us to do a bit of herb gardening of our own. This book tells how, and lists (with clear line illustrations) more than a hundred plants of interesting taste and odor.

Science News Letter, June 6, 1942

PSYCHOLOGY

DEVELOPMENTAL DIAGNOSIS, Normal and Abnormal Child Development, Clinical Methods and Practical Applications—Arnold Gesell and Catherine S. Amatruda—*Hoeber,* 447 p., illus., $6.50. For early detection of abnormalities of mental growth.

Science News Letter, June 6, 1942

ANTHROPOLOGY

INDIANS OF SOUTH AMERICA — Paul Radin—*Doubleday, Doran,* 324 p., illus., $4. We Americans have long been interested in the Indians of our own country, but have not bothered to learn much about those in the lands to the south, where they still form large, frequently dominant, elements in the population. This study by a noted Swiss anthropologist offers opportunity to fill in this neglected spot.

Science News Letter, June 6, 1942

BOTANY

A SYMPOSIUM ON THE STRUCTURE OF PROTOPLASM, A Monograph of the American Society of Plant Physiologists —William Seifriz, ed.—*Iowa State College Press,* 283 p., illus., $2.50. See page 364.

Science News Letter, June 6, 1942

PSYCHOLOGY

THINK FOR YOURSELF, A Handbook of Training in Initiative and Intelligence for Fighting Services—*Longmans, Green,* 60 p., illus., 40c. A pocketsize book of British origin intended to "help Platoon Officers and N.C.O.'s to lay a foundation in the early training of soldiers on which the habit of thinking for themselves will be formed."

Science News Letter, June 6, 1942

CHILD STUDY

UNDERSTANDING YOUR BABY, How He Grows and What He Needs—Lois R. Schulz and Mollie Stevens Smart—*Sun Dial Press,* illus., $1.

Science News Letter, June 6, 1942